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# Climate change

## What is adaptation?

The Intergovernmental Panel of Climate Change (IPCC) tells us that due to past emissions of greenhouse gases, future climate change is inevitable and that Australia is very vulnerable to its impacts.<sup>1</sup> Western Australia is already experiencing some climate change impacts

While in the past climate change policy has focussed primarily on mitigating or reducing greenhouse gas emissions and therefore reducing the rate and the magnitude of climate change, it is now apparent that we also need to adapt our way of life to make us less vulnerable to the unavoidable negative impacts that climate change will have on our society, our environment and our economy.

Adaptation is defined by the United Nations Framework Convention on Climate Change as an 'adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities'. In simpler terms, adaptation refers to any activity that reduces the negative impacts of climate change and/or enables us to take advantage of any opportunities that climate change may present.

We have now reached a stage where neither mitigation nor adaptation alone can prevent climate change impacts and we need to do both to significantly reduce the risks we face from these.

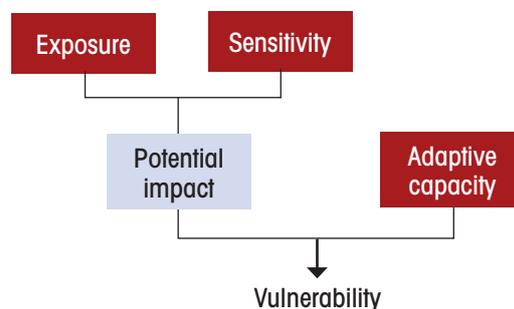
There will be costs associated with both the climate change impacts and adapting to these. In some cases implementing adaptation actions will allow us to avoid the costs of some climate change impacts but in other cases adaptation will only reduce these costs. Without strong and timely mitigation however, climate change impacts in some regions may be so severe that adaptation may not be an option.

The impacts of climate change will vary from region to region and, as such the consequences will be circumstance-specific. Therefore, while mitigation responses may best be determined through international, national and state processes, many adaptation strategies are best developed at a regional level taking into account regional conditions and circumstances and harnessing the potential of regional communities. The scale of impacts projected requires us to act now, to identify the risks that climate change presents and develop strategies to reduce these and adapt to climate change.

<sup>1</sup> IPCC, Appendix 1 Glossary Fourth Assessment Report.

Risk management approaches such as those set out in the Australian Government's publication '*Climate Change Impacts and Risk Management, A Guide for Business and Government*' (available from: [www.climatechange.gov.au/impacts/publications/pubs/risk-management.pdf](http://www.climatechange.gov.au/impacts/publications/pubs/risk-management.pdf)) provide a useful framework for identifying climate change risks, engaging interested parties and collaboratively determining strategies and measures to reduce risk and adapt to climate change impacts. Identifying and prioritising the risks is a useful precursor to incorporating climate change considerations into risk management, decision making and strategic planning activities.

An important step in determining how best to adapt is to identify how vulnerable our systems (natural and human) are to climate change impacts. Vulnerability refers to the degree to which a system is susceptible to, and unable to cope with, the adverse effects of climate change. It is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed to those changes, its sensitivity, and its adaptive capacity.



**Vulnerability and its components** (Allen Consulting, 2005)

For example, to assess the vulnerability of an agricultural system to climate change and determine appropriate adaptation strategies we must understand:

- how the climate is likely to change in the agricultural region (the system's exposure to climate change) — how will rainfall and temperature change, are droughts likely etc?
- how sensitive the system is to change (its sensitivity) — how tolerant are the agricultural revenue generators, including the crop, to the predicted climate change impacts?
- what is the potential to adjust the system to the changes predicted (its adaptive capacity) — is there potential to plant crops that will be able to withstand the projected changes? will diversifying the system (establishing a range of revenue generators) improve its resilience to climate change?



# Climate change

The systems that are most vulnerable to the impacts of climate change are those that are highly exposed to the impacts, are sensitive to the risks and have little or no capacity to adapt to these.

Adaptation strategies are generally developed to reduce vulnerability to climate change impacts by:

- reducing exposure to climate change, for example, establishing communities away from high risk flood prone areas;
- reducing sensitivity to climate change, for example, designing infrastructure such as bridges, roads and buildings that can withstand climate changes such as increased temperatures and storm surges; and
- increasing the adaptive capacity of systems, for example, putting into place emergency management systems to deal with flood or bushfire conditions.

Adaptation strategies also aim to increase the resilience of systems to climate change impacts. Such systems are developed or encouraged by taking a holistic view, considering the interconnected nature of systems within society, the environment and the economy and recognising that an impact on one system can lead to chain or flow-on effects to other systems. Resilient systems are those that can absorb disturbances such as climate change impacts, reduce disruption and retain their basic function and structure.

Cooperation between all levels of society, including government, industry, the scientific community, technical and professional experts as well as the general public is essential to developing adaptation strategies. This will ensure that decision-making is more informed, skills and lessons learned are shared, duplication of time, effort and resources is avoided and that adaptation is tailored to local conditions.

Climate change presents risks to our ways of life, our environment and our economy. Our challenge is to adapt to the climate change impacts sustainably, basing our decisions on the best available science, risk analysis, an understanding of our vulnerabilities and with consideration of the complex flow-on effects that climate change and the policies we develop will have on our human and natural systems.